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| Date. | | Dublin M.T. | | Mag. |
|---|---|---|---|---|
| | | h | m | |
| 1887, Jan. | 11 | 6 | 35 | 5·8 |
| | 12 | 6 | 5 | 5·7 |
| Sept. | 7 | 8 | 20 | 6·4 |
| | 16 | 7 | 40 | 6·4 |
| | 17 | 8 | 15 | 6·1 |
| | 18 | 7 | 45 | 5·75 |
| | 18 | 10 | 55 | 5·65 |
| | 19 | 8 | 20 | 5·7 |
| | 22 | 9 | 20 | 6·1 |
| | 23 | 9 | 15 | 6·1 |
| | 28 | 11 | 5 | 5·75 |
| | 29 | 7 | 55 | 5·65 |
| | 30 | 8 | 55 | 5·95 |
| Oct. | 8 | 7 | 45 | 6·1 |
| | 9 | 8 | 20 | 6·0 |
| | 12 | 9 | 20 | 6·2 |
| | 21 | 7 | 37 | 5·9 |
| | 23 | 10 | 15 | 5·7 |
| | 25 | 7 | 18 | 6·0 |
| 1887, Oct. | 27 | 8 | 30 | 6·3 |
| | 27 | 10 | 30 | 6·2 |
| | 29 | 11 | 5 | 5·9 |
| Nov. | 1 | 10 | 8 | 5·7 |
| | 13 | 6 | 15 | 6·1 |
| | 14 | 7 | 30 | 6·5 |
| | 27 | 7 | 10 | 5·8 |
| Dec. | 4 | 7 | 10 | 5·8 |
| | 7 | 6 | 40 | 6·2 |
| | 9 | 9 | 20 | 6·1 |
| | 10 | 6 | 45 | 6·05 |
| | 11 | 7 | 25 | 5·7 |
| | 13 | 5 | 40 | 5·8 |
| | 16 | 7 | 5 | 6·3 |
| | 17 | 6 | 8 | 6·3 |
| | 19 | 7 | 15 | 5·75 |
| | 20 | 5 | 25 | 5·65 |
| | 21 | 5 | 58 | 5·7 |
| | 27 | 5 | 35 | 5·9 |

A maximum probably occurred during the night of December 20. This corresponds to epoch No. 480, reckoning from an assumed maximum observed by me 1876, December 14.

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## *Introduction to a Catalogue of the Mean Colours of* 758 *Stars; with Appendix, containing the Colours of* 26 *Southern Stars.* By W. S. Franks.

The Catalogue of Star Colours presented to the Society[*] differs somewhat from either of its predecessors. The first catalogue, undertaken at the suggestion of the late Rev. T. W. Webb (*Monthly Notices*, June 1878), was intended to give an approximate idea of the colours of all the naked-eye stars visible in these latitudes, as seen with a 5-inch refractor. It contained 3890 stars, the southern limit in Declination being −25°. The time occupied—about ten months—in the survey of so many stars was necessarily too short to admit of other than single observations of each object, and the list so made was regarded then more as an experimental opening of a new field than as a work for future reference. In 1884, however, the greater portion

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[*] Deposited in the Library.

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of these observations was included (in an abbreviated notation) by Professor Pickering in his " Meridian Photometry," published as vol. xiv. part i. of the *Annals of Harvard College Observatory*. About this time the idea occurred to me that as I had worked for some years exclusively with *reflecting* telescopes, whilst the aforesaid colour estimates were made with a *refractor*, it might be worth while to repeat some of the observations, to ascertain how far the results would be affected by the kind of instrument used. Accordingly the colours of some 1730 of the brighter stars were re-examined, between October 1884 and March 1886, two Newtonian reflectors, of 11¼ inches and 5¼ inches aperture, being employed for the purpose. The smaller instrument was reserved for circumpolar objects, which were not accessible to the 11¼-inch on account of its peculiar mounting. The results arrived at were embodied in the second catalogue, the introduction to which appeared in the *Monthly Notices* for April 1886. The opinion is therein expressed that no appreciable difference exists between the colour results yielded by a reflector and a refractor, but that a great difference of aperture does exert a modifying effect. In both of these catalogues the colours of the stars were given according to the old conventional style, in which the tints of flowers, fruit, and precious stones played a prominent part. But the need for something more definite and systematic than these terrestrial analogies had long been felt, and therefore I attempted the measure of reform described in *Monthly Notices* for March 1887. After subjecting the new system of nomenclature to practical tests by myself and other observers, I determined to make a fresh survey of the colours of some of the brighter stars on this plan, in order to show its adaptability to the required purpose. The selection was guided by Proctor's *Small Star Atlas*, and only such stars retained as were designated by Greek letters; the total number being 758, between the north pole and 25° S. Declination. Three telescopes, all reflectors, were employed in the work, which was begun on December 18, 1886, and completed by October 11, 1887. The apertures and powers used were as follows:—(1) 11¼-inch Calver, 80 inches focus; eyepieces 90 and 200 Kellner; the observations with this instrument are entered in *black* ink. (2) 5¼-inch Calver, 40 inches focus, eyepieces 45 Kellner and 120 Huyghenian; observations written in *red* ink. (3) 8½-inch With, 63 inches focus, eyepieces 70 and 140 Kellner; observations in *violet* ink. Higher powers were occasionally used in the scrutiny of double stars. Telescopes 1 and 2 passed out of my possession during the progress of the work, the 8½-inch With being exclusively devoted to it from May 8, 1887, to its completion. Finding that I could observe stars much lower than −25°, on or near the meridian, I made a working list of some twenty-six that were above 4 mag., and situated in the zone from −25° to −34°. These are given in the Appendix. It may be thought that colour observations of such low stars cannot possess any value, on account of the great atmospheric

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disturbance which usually prevails near the horizon; and this is undoubtedly true in a general sense. But the experience gained by many thousands of colour estimates had taught me to discriminate somewhat between the inherent hue of a star and its accidental surroundings, otherwise I should not have attempted it. Knowing, also, that no previous observations existed of the colours of most of these objects, I thought that even a crude approximation to their tints was better than absolute ignorance of them, and that the observations so made might possibly be of some service as bearing on the question of atmospheric absorption, when compared with others that may be afterwards made at some southern station.

The catalogue itself needs but little explanation. The work was originally divided into four zones—circumpolar, northern, equatorial, and southern—for convenience in observing, and it has not been thought worth while to disturb this arrangement. The constellations in each zone, as well as the stars in each constellation, being in order of Right Ascension, there can be no difficulty in identifying any object. Column I. gives the name of the star, according to the authority of the B.A.C.; the mark * indicates that it does not appear in the 1884–86 Catalogue, and †* that it is not included in either the 1877–78 or 1884–86 observations. Column II. has the adopted *mean* colour, deduced from the observations in last column but one; columns III. and IV. the R.A. and Declination for epoch 1880 (these are merely approximate, but sufficient for identification); and column V. the photometric magnitude of the star, derived from the Harvard published results. The next column contains the observed colour on three different occasions; and the last column supplies the date of each observation, together with such remarks as are incidental to the object. As to the system of nomenclature used, the coloured chart will give a fair idea of it, though it is not pretended that its execution is artistic, or that the tints themselves are in exact accordance with those of the spectrum on which it is based. The annexed table presents the complete list of symbols, with their equivalents in the ordinary notation. Any further particulars can be ascertained on reference to the paper in the *Monthly Notices* (vol. xlvii. No. 5). The term "bluish purple" (BP) has, however, in the present work been changed to "bluish violet" (BV), as being more in harmony with the general plan of nomenclature.

The Appendix contains the mean colours of twenty-six stars above 4 mag., from −25° to −34°, five observations being made of each. Their colours had not, with one or two exceptions, been previously recorded, and the present attempt only professes to be an approximation to their real tints. It is hoped that some southern observer will re-examine them, and give the result of the comparison.

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## *Occultations of Stars during the Total Eclipse of the Moon,* 1888, *January* 28, *observed at the Armagh Observatory.* By J. L. E. Dreyer, Ph.D.

I observed the eclipse with the 10-inch refractor, which is erected 120 feet south of the centre of the transit room. Time determinations were made with the mural-circle immediately before and during the eclipse, and the clock in the dome was repeatedly compared with that in the transit room by electric signals. The sky was cloudless but somewhat foggy. A number of stars not given in the following list were watched either at disappearance or reappearance, but the times could not be observed accurately in consequence of the brightness of the limb. For nearly half an hour after the commencement of the total phase the preceding limb of the Moon was still nearly as bright as before totality, and a similar brightness of the following limb occurred before the end of the total phase. About the middle of the eclipse the Moon appeared to the naked eye as a fairly bright disc with a dark isosceles triangle inscribed in it, having the base to the north.

In reducing the observed times to Greenwich Mean Time the longitude $0^{h}\ 26^{m}\ 35^{s}\cdot5$ was used. The latitude of the dome is assumed $= 54^{\circ}\ 21'\ 11''\cdot5$; it is 210 feet above mean sea level.

| Star's No. | Phenom. | Loc. Sid. T. | G.M.T. | Remarks. |
|---|---|---|---|---|
| | | h m s | h m s | |
| 164 | Disapp. | 6 36 14·3 | 10 32 19·4 | Fair. |
| 165 | Disapp. | 6 37 18·7 | 10 33 23·6 | * very faint. |
| 198 | Disapp. | 7 13 30·9 | 11 9 29·9 | Fair. |
| 209 | Disapp. | 7 24 6·0 | 11 20 3·2 | Difficult. |
| 210 | Disapp. | 7 24 57·0 | 11 20 54·0 | — |
| 201 | Disapp. | 7 28 24·3 | 11 24 20·8 | Good. |
| 164 | Reapp. | 7 49 9·2 | 11 45 2·3 | Good. |
| 236 | Disapp. | 7 56 2·0 | 11 51 54·0 | * very faint. |
| 201 | Reapp. | 8 8 47·1 | 12 4 37·0 | — |

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## *The Total Lunar Eclipse of* 1888, *January* 28, *observed at the Dunsink Observatory.* By A. A. Rambaut.

(*Communicated by Sir R. S. Ball.*)

On the night of January 28 this observatory was specially favoured in point of weather. Although during the afternoon the clouds looked very threatening, shortly after the Moon rose the sky cleared, and remained perfectly unclouded for the rest of the night.

The instrument employed was the "South" equatorial of 11¾ inches aperture, carrying a power of 177, and the dome was